An ABSTRACT *of ſundry Papers and Propoſals for improving the Inland Navigation of Pennſylvania and Maryland, by opening a Communication between the Tide-Waters of Delaware and Suſquehannah, or Cheſopeake Bay; with a Scheme for an eaſy and ſhort Land-Communication between the Waters of Suſquehannah and Chriſtiana-Creek, a Branch of Delaware; to which are annexed ſome Eſtimates of Expence, &c.*

THE American Philoſophical Society, held at Philadelphia, have always conſidered it is one great end of their Inſtitution, to ſet on foot, and forward the execution of, ſuch public-ſpirited undertakings, as have a tendency to advance the landed and commercial intereſt of the Britiſh Colonies in general, and particularly of thoſe Middle Colonies, with which they are more immediately connected.

WITH this view it was, that they appointed different Committees, to view the ground, and conſider in what manner a water communication might be beſt opened, between the Provinces of Maryland and Pennſylvania; and particularly by what means the large and increaſing number of frontier-ſettlers, eſpecially thoſe on the Saſquehannah and its branches, might be enabled to bring their produce to market at the cheapeſt rate, whether by land or water. To enable the Society to make theſe ſurveys, levels, &c. the Merchants in Philadelphia generouſly ſubſcribed near Two hundred Pounds.

THE firſt place propoſed to be viewed, was the ground between the tide-waters of *Apoquiniminck* and *Bohemia*, marked AB in the annexed map (Plate VII.) and John Lukens, Eſq; Surveyor-General, John Sellers, Matthew Clarkſon, and Joſeph Ellicot, Eſqrs. Meſſrs. Thomas Gilpin, Richard Sittiforth, William Killen, John Stapler, of Pennſylvania, and William Rumſey, Eſq; of Maryland, were appointed a Committee for this ſervice, May 5th, 1769; who having performed the ſame, their *Report*, ſigned by the three firſt named Gentlemen, was given in to the Society, June 19th, 1769, ſetting forth, "That they had viewed the ground aforeſaid, taken the "levels, ſurveyed the diſtance, and eſſayed a calculation of

" the expence, which would attend the cutting a CANAL in " that place, which they were of opinion might be executed " with LOCKS for the ſum of *Forty Thouſand Pounds* * Penn- " ſylvania money.

" THE depth of earth from the higheſt ground to the level " of navigation being very great, they declined making any " eſtimate of what the coſt would be, to make a clear paſſage " from river to river, without LOCKS, judging it an under- " taking beyond our preſent abilities."

THE whole length of the ground where this Canal is propoſed, from tide to tide, is 5 miles 107 perches. They found the waters in the Head Branch of Bohemia about eighteen feet below the ſurface of the higheſt ground, through which the Canal muſt go, and the water in the Head Branch of Apoquiniminck, about twenty-ſix feet below the ſame. The tide-waters are ſixty-ſix feet below the higheſt ground.

THEY found that for making a *Lock-Navigation* (under the above circumſtances) 208805 cubic yards of earth muſt be removed, that 10,260 perches of ſtone-wall would be neceſſary for ſecuring the banks of the Canal; that three mills muſt be purchaſed that ſtand in the way of the execution of the plan, and that ſix *Locks* muſt be erected; all which, they judge, might be done at the expence of Forty Thouſand Pounds, as aforeſaid.

MR. Thomas Gilpin, one of the above Committee, laid before the Society a plan of a Canal, and the elevation of the ground, &c. between Cheſter River, in Maryland, and Duck-Creek, in Pennſylvania, at the place marked CD, in the annexed map. " The diſtance from tide to tide is here about " twelve miles, and the length of the Canal, by the courſes it " muſt take, would be fourteen miles. The height of the " middle ground above the tide is thirty-three feet;" and he reports, " that the water in Cheſter River and Duck Creek " is ſufficient to ſupply the Canal and Locks to the height of " twenty-two feet above the tides. He eſtimates only about " Eight

* One Spaniſh milled Dollar paſſes in Pennſylvania for Seven Shillings and Six-Pence; by which all eſtimates in the currency of that Province may be turned into Sterling.

" Eight Thouſand and Fifty Pounds for making a navigation
" for flat-bottomed boats, that would carry one thouſand
" buſhels of wheat each; but to make it fit for ſhallops, with
" a Lock-Navigation, he ſtates the whole expence at Twenty-
" Eight Thouſand Two-Hundred and Ninety-Eight Pounds."

SEVERAL difficulties having been apprehended in both the above Plans, and particularly the great expence in executing the firſt to any advantage; and that if the ſecond could be executed at the expence propoſed, it would carry all the navigation of the river Suſquehannah (which is the great object in view,) too far down into Cheſopeak-Bay, for an advantageous communication with Philadelphia; it was therefore propoſed, that ſome other places ſhould be examined, by which the water carriage between Suſquehannah and Delaware might be rendered ſhorter, and more practicable.

COMMITTEES were accordingly appointed to examine, ſurvey and level the ground, between the navigable waters of Delaware River in Pennſylvania, and Elk River that empties into Cheſopeake, near the mouth of Suſquehannah. This ſervice was compleated by the Committee with great diligence, and in the extremity of winter, as they found it beſt to proceed when the ſurface of the waters and marſhes were frozen over. Their *Report* was delivered to the Society, 16th February, 1770; an Abſtract of which follows, viz.

" THAT they had divided themſelves into two parties for
" the greater expedition; one of which parties, viz. Samuel
" Rhoads, Eſq; the Revd Mr. John Ewing, Meſſrs. Rich-
" ard ittiforth, and Joſeph Horatio Anderſon, undertook
" to ſurvey and level the ground between the tide water of
" Red Lion Creek, which empties into the Bay of Delaware
" about ſix miles below New-Caſtle, and the tide water of
" Long Creek, which is a branch of Elk-River, (the ground
" marked EF, in the plan). The other party, conſiſting of
" Meſſrs John Stapler, Joel Bailey, Thomas Gilpin, and
" Levi Hollingſworth, undertook to ſurvey and level the
" ground marked GH, between the navigable waters of
" Chriſtiana Creek, which empties into Delaware about four
" miles above New-Caſtle, and the Head of Elk River.

THE work being finiſhed, they report further, " That they " find it a very eaſy and practicable matter to cut a Canal in " either of the above places, ſufficiently large to anſwer the " purpoſe of a Barge Navigation, as it is called, and that at a " moderate expence. Or if a Lock Navigation ſhould be " thought more eligible, as by that means the ſame veſſels " that bring the produce and merchandize to the Canals, may " proceed to market without unloading, this alſo (although it " might be attended with a greater expence) is alſo practica- " ble at both the above places."

As to the Barge Navigation, &c. (ſhould that be thought beſt) they obſerve that " the ground in both places will admit of " a Canal being dug on a level between the tide waters of De- " laware and Cheſopeake; in which barges may continually " ply, loading and unloading at each end; while ſhallops, " boats, and other ſmall craft may come to the ends of the " Canal, to bring or carry off the various articles of com- " merce that may be conveyed through this communication. " Warehouſes muſt be built at each end of the Canal, to " prevent unneceſſary delays, and damage of the goods. " The head waters of Chriſtiana and Elk Rivers may be " brought in to ſupply either of theſe Canals.

THE Committee further report, that when they had compleated their ſurveys, &c. as above; they proceeded, agreeable to their inſtructions, to Peach Bottom Ferry, on Suſquehannah, in order to make the beſt enquiry they could, concerning the different Falls and Rifts in that River; and to examine where the beſt and ſhorteſt road could be made from that place to Chriſtiana Bridge.

WITH reſpect to the different Falls, they report, from the beſt information they could obtain, " That the *Bald Friar* " *Falls*, are the moſt difficult to paſs in that river. Theſe lie " in Maryland, about three miles below the Southern bounda- " ry of this Province; that the other Falls are often paſſed in " canoes, flats, rafts, &c. that they all diſappear in the time " of a freſh, and therefore may be paſſed with the greateſt ſafe- " ty, and that in the intermediate parts of the river, the cur-

" rent

" rent is ſo ſlow and gentle, that it is eaſy to row, or even ſail " againſt it. From the great quantity of water which this " river contains, it appears obvious, that with a very mo- " derate expence a Channel may be opened through the ſe- " veral Falls, by blowing up a few rocks, ſo as to make a " good navigation, without doing any detriment to the other " parts of the river by leſſening its depth; or where it may be " judged more expedient, a ſmall Canal may be cut on the " ſhore, ſo as to avoid all difficulty and danger from them. " They cannot aſcertain the expence of this work with preci- " ſion, but they apprehend it will not amount to more than " Four Thouſand Pounds."

With reſpect to the road, they add, " That from the " mouth of Peters's Creek, (which empties into Suſquehan- " nah, at Peach Bottom, about three miles above the boun- " dary line of the Province, and where a very convenient " harbour may be made for boats,) they had examined the " ground, and find a good road may be made from thence to " Chriſtiana Bridge, by an eaſy aſcent along the valley of this " creek, which extends about two miles from the river in a " direction nearly parallel to the ſaid Weſt line. The ground " admits of a good road from this to the place where the ſaid " boundary line croſſes Octorara Creek, near the Horſe- " Shoe Ford; after which it may be continued near the ſaid " line until it meets with the boundary of New Caſtle County. " That part of the road which lies in New-Caſtle County is " already made, and there is a law in that government, for " keeping it in good repair. There are no hills to obſtruct " it, except at Octorara Creek and Great Elk; the moſt " convenient places of paſſing which appear to be at Wilkie's " Mill, and the abovementioned Horſe-Shoe Ford, where the " hills may be eaſily aſcended by winding a little on the " Pennſylvania ſide. This road may be made at a ſmall ex- " pence, and will reduce the diſtance between Peach Bottom " and the tide waters of Chriſtiana Creek to about *Thirty two* " *Miles*. Bridges muſt be thrown over the ſtreams of Octora- " ra and Elk, as they are frequently ſo high as not to be " forded. The whole expence of this work, they ſuppoſe, will " not exceed a Thouſand or Fifteen Hundred Pounds.

" Upon

"UPON the whole, they remark, that the river Suſquehannah "is the natural channel through which the produce of three-"fourths of this Province muſt in time be conveyed to mark-"et for exportation, and through which great part of the back "inhabitants will be ſupplied with foreign commodities.

"THAT this conveyance will become eaſy and cheap, to the "ſettlers above the Peach Bottom or Bald Friar Falls; and "may, by proper encouragement, be found the moſt uſeful "and convenient for all the Weſtern trade.

"THAT a road from Peach Bottom to the navigable waters "of Chriſtiana Creek, will reduce the whole land carriage of "the moſt remote inhabitants on the various branches of the "Suſquehannah to thirty-two miles, which appears to be the "ſhorteſt portage from that river, to the navigable branches "of Delaware, which can be had within the limits of this go-"vernment; and that the conveyance from Chriſtiana to "Philadelphia is known to be ſafe and eaſy.

THAT clearing a channel through the Bald Friar Falls, and "opening a Canal thro' either of the abovementioned levels, "will not only reduce the whole trade of the Suſquehannah "to a water carriage, but will open ſuch a communication "between the Delaware, and all the rivers of the Cheſopeak-"Bay, as will greatly advance the commercial intereſt of all "the colonies adjoining thereon, by reducing the expence of "carriage, on the various articles of traffic, which are yearly "tranſported from one Province to another, through theſe "extenſive waters."

REMARKS.

Firſt, WITH reſpect to the water communication propoſed from the mouth of Red-Lion Creek on Delaware, below New-Caſtle, to the navigable branches of Elk-River, at the place marked EF, it appears from the drafts, &c. that the ſame may be executed by cutting either from Long-Creek or Broad-Creek.

THE

THE length of the Canal, if from Long-Creek to Delaware, is 10 miles, 135 perches; if from Broad-Creek to Ditto, it is 9 miles, 200 perches; and either of theſe *Canals* lead immediately into Delaware.

THE Committee declare themſelves fully ſatisfied, that a good Canal, either for a Barge or Lock Navigation, may be made in this place, through one of the hollows adjoining the ridge on which they carried their level, at a leſs expence than at any place of equal convenience. The ſeverity of the ſeaſon did not permit them to carry their level along either of theſe hollows, or to examine the ſoil ſo ſtrictly, as that they could pretend to make an accurate eſtimate of the expence. But, by the beſt judgment they could form, the ground to be dug and moved for a Barge Navigation, is about 420,000 cubic yards, and the whole expence of this and the other work neceſſary for a Barge Navigation in this place, they eſtimate at £, 14,426.

Secondly, WITH reſpect to the Canal propoſed from Elk-River to the navigable waters of Chriſtiana-Creek, near the bridge, at the place marked GH; the diſtance or length of the ſame, by the different courſes, is 12 miles, 10 perches. The height of the heigheſt ground above the level of the tide is ſixty-eight feet and a half.

THE ground to be dug and moved, for a Barge Navigation, they make 387860 cubic yards.

AND the whole expence of compleating the Canal, or a Barge Navigation, - -	£. 19,396 : 10
THE additional expence for a Lock Navigation	40,924 : 10
Total for a Lock Navigation,	£. 60,321

THE difference between the expence of a Barge and Lock Navigation being ſo great, the Committee therefore recommend the former for the preſent.

THE particular eſtimates upon which the foregoing Abſtract is founded, together with the Plans of Surveys, Elevations of the Ground, and Drafts of the different propoſed Canals, being

being too large to be inſerted in the Tranſactions of the Society, are therefore lodged in their Cabinet for the inſpection of thoſe who may deſire further ſatisfaction, in regard to the Practicability of carrying either of the above ſchemes into execution, which on a due conſideration of all circumſtances may be judged moſt for the public ſervice.

In the mean time, the immediate opening the propoſed new road from Peach-Bottom on Suſquehannah, to the tide waters of Criſtiana Creek, is recommended as a matter of the utmoſt importance, not only to the city of Philadelphia, but to a great part of the ſettlers on the waters of Suſquehannah.

To the American Philosophical Society, *&c.*

A Deſcription of a MACHINE for cutting FILES, a Model of which was preſented the Society ſome Time ago.
By B. O.

REFERENCES.

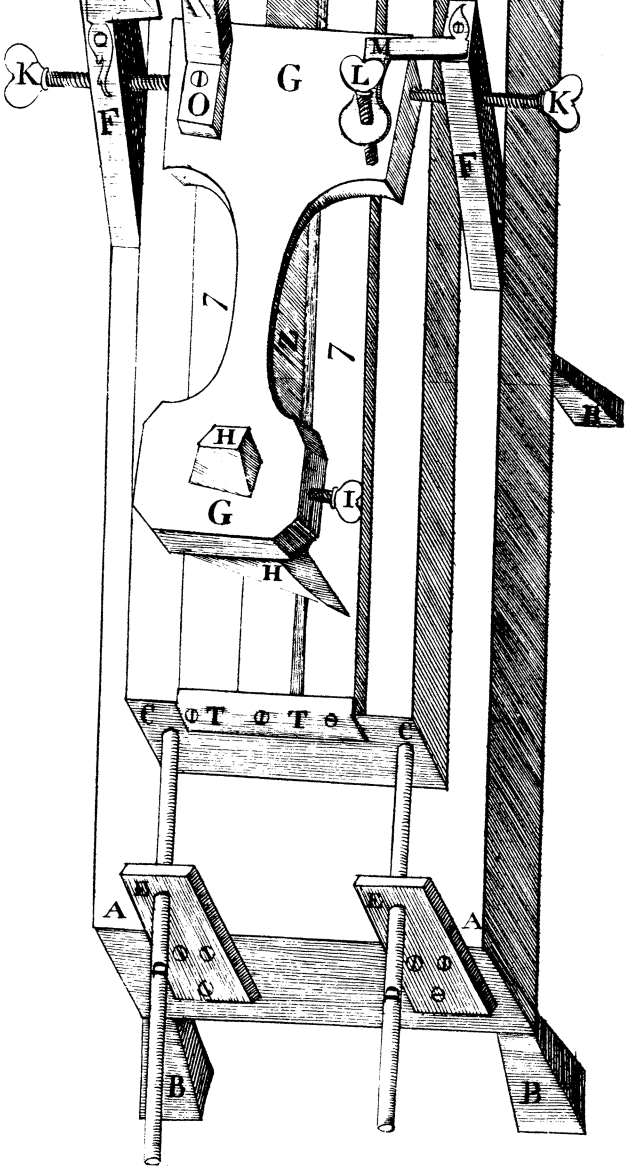
A BENCH, made of well ſeaſoned oak, and the face of it plained very ſmooth. *AAAA.* (Plate VII. Fig. 2.)

BBBBB, The feet to the bench which ſhould be ſubſtantial.

CCCC, The carriage on which the files are laid, which moves along the face of the bench *AAAA*, parallel to its ſides, and carries the files gradually under the edge of the chiſel *HH*, while the teeth are cut: This carriage is made to move by a contrivance ſomewhat ſimilar to that which carries the log againſt the ſaw of a ſaw mill, as will be more particularly deſcribed.

DDD, Are three iron rods, inverted into the ends of the carriage *CCCC*, and which paſſes through holes in the ſtuds *EEE*, that are ſcrewed firmly againſt the ends of the bench *AAAA*, for directing the courſe of the carriage *CCCC* parallel to the ſides of the ſaid bench.

FF, Two



York

Boundary Line

Peach Bottom

Muddy Cr.

Selsons Ferry

Proposd

Proposd

Pecquea Cr.

Bald Falls

Fryar

Octoraro Cr.

Dur Cr.

Swan Cr.

Bush Town

Bush River

Joppa

Gunpowder River

Baltimore Town

Patapsco River

CHESAPEAK BAY

M A R

V A

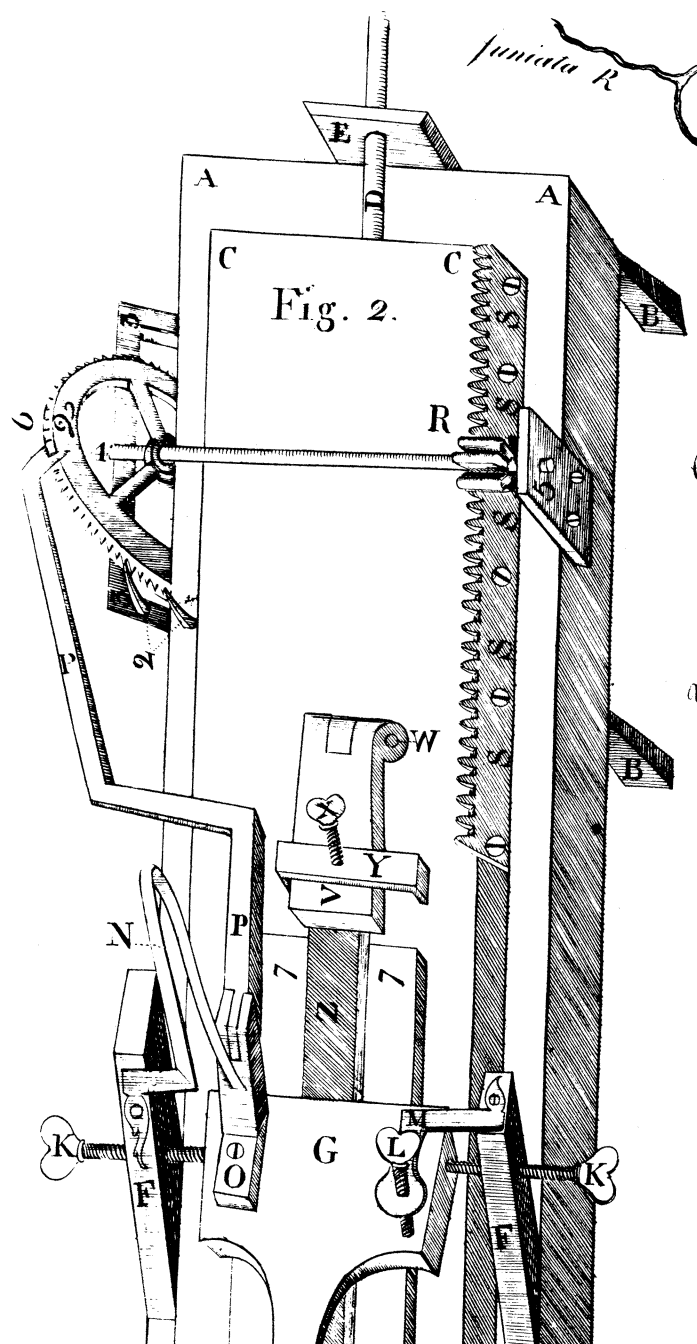
L A

N

A Scale of Miles

1 2 3 4 5 6 7 8 9 10 15 20

I. Smither Sculp



Juniata R

Tulpihockan

Propos'd Road from Harris's Ferry to Reading 47 M

Harris's Ferry

Conewago Cr.

Yellow Breaches Cr.

Swatara Cr.

Conewago Cr.

Conewago Cr.

Susquehannah

Codorus Cr.

Chickisalunga Cr.

Lancaster

Wrights Ferry

River

Conestoga Cr.

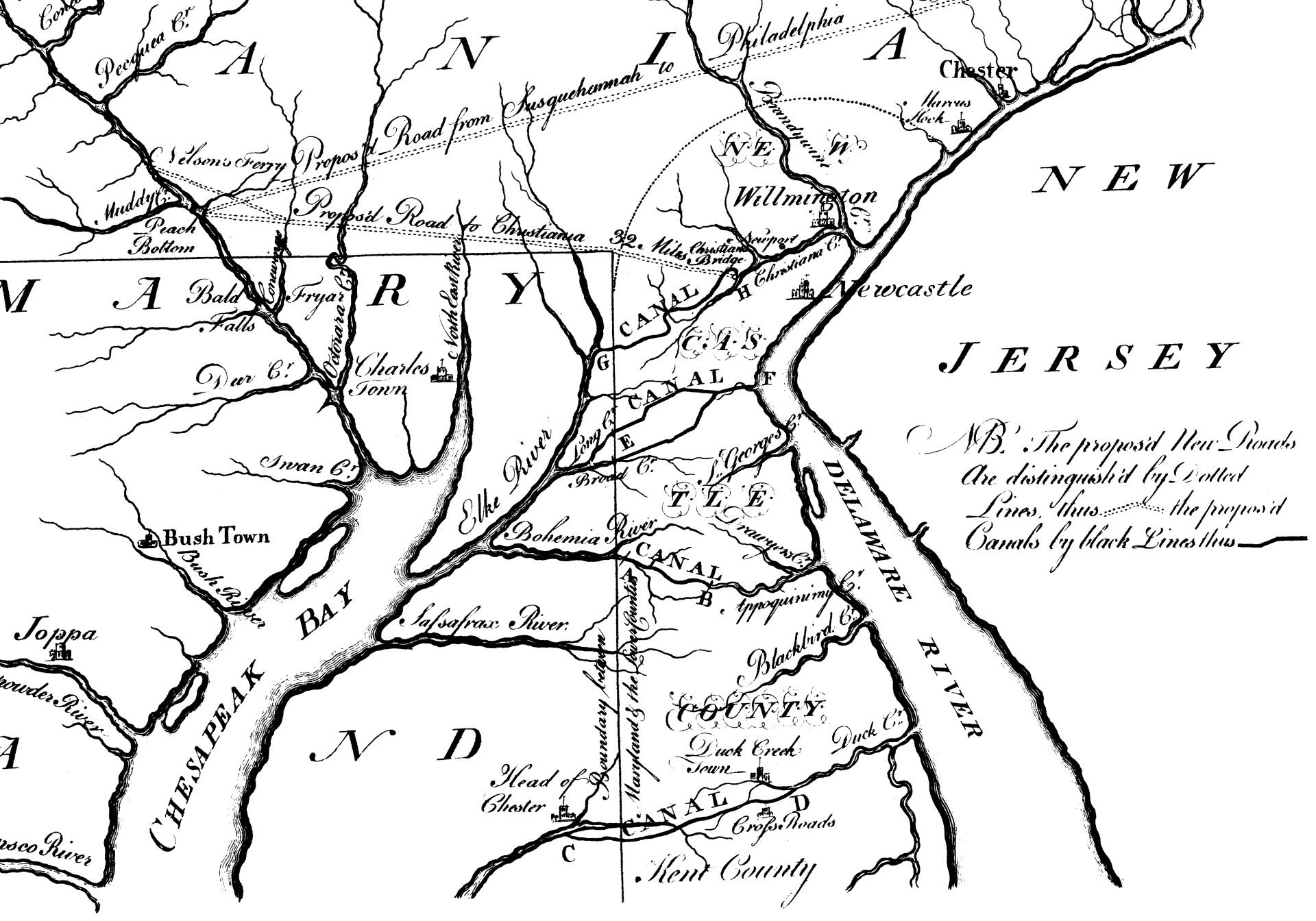
Pequea Cr.

York

P E N

V A

Nelsons Ferry Propos'd


Pecquea Cr.
Philadelphia
Chester
Marcus Hook
Pennsylvania
N E W
Selsoms Ferry Proposd Road from Susquehannah to
Muddy Cr.
Peach Bottom
Proposd Road to Christiana
32. Miles
Christiana Bridge
Scuipper
Christiana Cr.
Willmington
Newcastle
Bald Friar
Falls
Conewago Cr.
North East River
CANAL
C. A. S.
CANAL
Dur Cr.
Charles Town
Swan Cr.
Elke River
Long Cr.
Broad Cr.
St. George's Cr.
T. L. E.
Bohemia River
Drawyers Cr.
CANAL
Bush Town
Bush River
Sassafrax River
Appoquinimy Cr.
Blackbird Cr.
Joppa
Boundary lodging
Maryland & the Lower Counties
COUNTY
Duck Creek Town
Duck Cr.
Head of Chester
CANAL
Cross Roads
Kent County
DELAWARE RIVER
N. B. The proposd New Roads Are distinguishd by Dotted Lines, thus ..... the proposd Canals by Black Lines thus

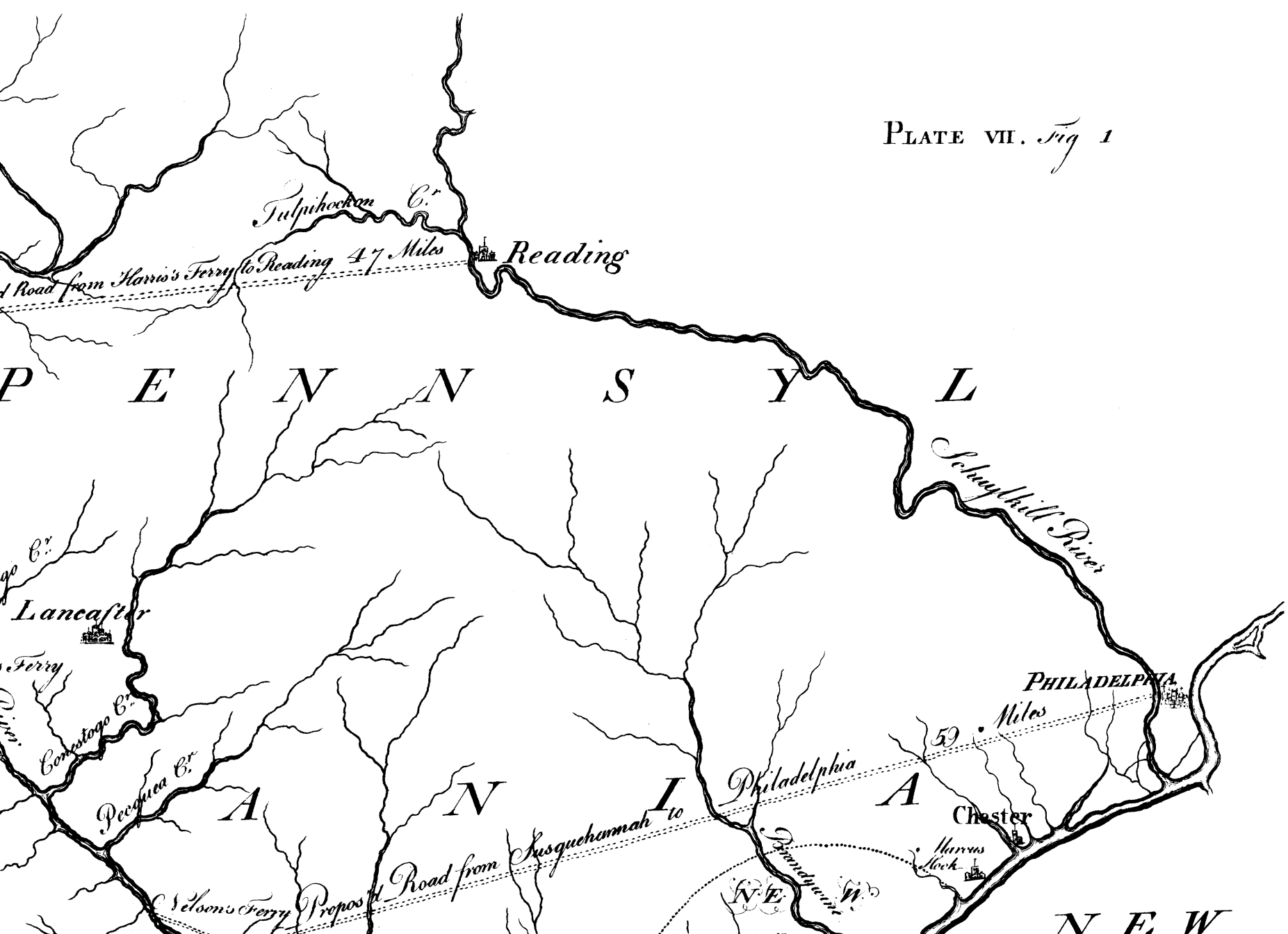


PLATE VII. Fig 1
Tulpihocken Cr.
Reading
Road from Harris's Ferry to Reading 47 Miles
P E N N S Y L
Schuylkill River
Lancaster
Ferry
Conestoga Cr.
Pequea Cr.
PHILADELPHIA
59 Miles
A N I A
Philadelphia
Chester
Marcus Hook
Susquehannah to
Nelsons Ferry Proposed Road from
Brandywine
N E W